
REVENUE FORECASTING IN CONNECTICUT

**LEGISLATIVE PROGRAM REVIEW AND
INVESTIGATIONS COMMITTEE
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CONNECTICUT GENERAL ASSEMBLY

LEGISLATIVE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE

The Legislative Program Review and Investigations Committee is a joint, bipartisan, statutory committee of the Connecticut General Assembly. It was established in 1972 to evaluate the efficiency, effectiveness, and statutory compliance of selected state agencies and programs, recommending remedies where needed. In 1975, the General Assembly expanded the committee's function to include investigations, and during the 1977 session added responsibility for "sunset" performance reviews. The committee was given authority to raise and report bills in 1985.

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SECTION I

OVERVIEW

BACKGROUND

Revenue forecasting methods vary throughout the states. In the last decade there have been numerous developments in the way states have undertaken revenue forecasting. There has been a general trend toward increased forecasting of national variables considered relevant to revenue performance. Variables like economic growth and inflation are coupled with state variables considered relevant to revenue collections, such as employment and personal income. Improved documentation of revenue models has also been a key factor in the attempt to link economic variables with state revenues.¹ These recent trends in forecasting present a significant departure from the past.

Traditionally, revenue estimating assumes that past revenue patterns provide a reliable guide to future tax collections. This approach could incorporate the simple assumption that a particular revenue source will grow by the same absolute amount as it did the year before, or, using a slightly more sophisticated technique, that revenues will grow by some rate of change that can be estimated from past years' performance. The failings of these methods are apparent when used to predict Connecticut's corporation tax stream from 1982 to 1988.

Table I-1. Percentage Change in Connecticut's Corporate Tax Receipts						
FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
33%	5%	20%	25%	26%	4%	-3%
Source: Revenue, Budget, and Economic Data: Fiscal Years 1969-1989 Office of Fiscal Analysis, Connecticut General Assembly.						

As the table clearly indicates, it would be difficult to forecast the corporation tax receipts for FY 87 and FY 88 based upon past trends. Using this methodology, the actual 3 percent decrease in FY 88 in corporate revenues would never have been predicted. This approach ignores state and national trends in corporate profits, and does not account for economic variables, such as the build-up of business inventories, that can affect

¹ State Policy Report (1990), Vol. 8, Issue 18, page 11.

corporate profits. Volatility in the tax structure increases the difficulty in obtaining accurate revenue forecasts, especially if past performance is the analytical tool for estimating. The role of volatility and the problems it causes Connecticut's revenue forecasters will be explored in more detail later.

THE USE OF MODELS

In recent years, state revenue forecasters have embraced "econometric" approaches to ascertain revenue estimates. Econometrics is the study of the application of statistical methods to the analysis of economic data. Typically, states using econometric approaches will attempt to derive revenue estimates from forecasts of state economic activity. Rather than forecasting future corporate tax revenues from past collections, the method estimates corporate taxes from future projections of corporate profitability.

Econometric models view the behavior of an economic system as guided by numerous variables whose interrelationships can be expressed by a set of simultaneous equations. The variables within the equations include, among other items, data on income, production, money stock, employment, prices, rent, and interest. Econometrics seeks to discover and measure the quantitative aspects of the actual operation of an economic system in order to forecast the course of certain economic events with a specific level of probability of those events occurring. Simply, the discipline attempts to determine what are the important pieces of the economy, how will they affect future activity, and what are the odds of it all occurring. Forecasting by econometric methods starts with model building and involves theorizing of the interrelationships between the variables under investigation and expressing them in mathematical terms. A model, then, is a set of mathematical relations, usually in the form of equations, each expressing an economic theory.²

Currently, there are four major firms that operate elaborate forecasting models of the national economy: Chase Econometrics; Evans Economics; Data Resources, Inc.; and WEFA, Inc. (formerly Wharton Econometrics). State revenue estimators frequently subscribe to the publications of one or more of these forecasting organizations. The firms will also produce either regional forecasting models or state-specific models to enhance their ability to predict economic trends that may be more accurate based upon local conditions.

National, regional, and state forecasting models are used to translate predictions of economic activity into estimates of state revenues. This is usually done through the use of simulation models that take forecasts of economic variables, such as income,

² Chou, Ya-lun, Statistical Analysis, (New York, 1975) p. 776.

and generate expected revenues based upon a particular level of taxation. These revenue models vary in complexity. Oregon, for instance, has a sophisticated personal income tax model that separates married from single filers and groups filers by income class to better estimate revenues. The Connecticut legislature recently contracted with a consultant to develop an income tax model that can be used as a tool for policy formulation. This "personal income tax simulation model"³ contains such parameter options as tax rates, tax brackets, exemption amounts, standard deductions, federal tax credits, indexing adjustments, and capital gains exclusions. The level of detail is intended to improve the accuracy in examining income tax options. However, it also indicates that not only have economic forecasting models become increasingly complex, so have the revenue estimating models that are tied to them.

CURRENT NATIONAL TRENDS

While the use of models represents a scientific approach to revenue forecasting, there is a great deal of debate among theorists and practitioners as to the approach's accuracy. The track record for econometric modeling has not been that good. Lester Thurow, a noted economist, writing in Dangerous Currents: The State of Economics, (1983) concluded that:

In the 1950s, when econometrics first emerged, the discipline was seen in America as an icebreaker that would lead the economics profession through the ice pack of conflicting theories. Econometric techniques would, it was presumed, conclusively prove or disprove economic hypotheses, accurately quantify economic relationships, and successfully predict the economic future. Unfortunately, the icebreaker failed to work and the econometric passage to utopia has not been found. The expectations might have been excessively optimistic, but failures of econometric techniques were to have a profound impact on the discipline of economics.

The problem began with the inability of macro-economic models to predict events -- soaring inflation, steadily climbing unemployment, and the cessation of productivity growth -- that were about to hit us in the 1970s. That failure to predict led to a breakdown in both the economics profession's confidence in econometric results and the public's confidence in economists.

³ Analysis of Connecticut Personal Income Tax Alternatives, Price Waterhouse (October 23, 1990), prepared for the Connecticut Tax Task Force.

While Thurow railed against the failures of economic models to accurately predict the upheavals of the seventies, a parallel can be drawn to the 1980s. To overcome the deficiencies of the national models, states turned increasingly to regional and local models in their desire to better predict economic outcomes. However, these models face the same problems the national models do; they are not able to foresee events that can have a significant impact on the state of the economy, nor are they able to determine a change in the relationship among economic variables. A year ago, when revenue forecasts were being made for the current state budgets, no one predicted that the price of a barrel of oil would double, and even if they did, the models might not accurately estimate the impact of this micro-economic variable on the macro-economy. States are faced with further difficulties in translating the impact this change will have on the rate of revenue collections.

FORECASTING BY CONSENSUS

Revenue forecasts in most states do not strictly adhere to any one econometric model. The practitioners have generally come to agree that scientific models alone will not always produce the most accurate results. Most states use a consensus approach to revenue estimating. This approach usually combines mathematical modeling with economic advice. For instance, many states subscribe to a newsletter, The Blue Chip Indicators, which summarizes the forecasts of 50 national economists. Some states will also draw upon local and regional economists who are watching for area trends for supplemental advice on how the economy in their area is performing.

To further improve the process of consensus forecasting, the National Governors Association asked the National Association of State Budget Officers (NASBO) and the Federation of Tax Administrators (FTA) to develop standards for "best practices" in revenue estimating. The governors wanted to know how to be certain that the revenue estimates they received were as accurate as possible. In 1989, NASBO and FTA developed a document that outlines the current state of revenue forecasting and suggests practices they believe may reduce the uncertainty associated with revenue estimating.

The practices cover five areas: 1) state and national forecasts; 2) revenue estimates; 3) data; 4) monitoring revenues; and 5) revising estimates. The general principles outlined for each area are that:

- forecasts should be developed by consensus drawing upon academic and business experts, as well as executive and legislative branch expertise;

- revenue estimates should be viewed with a degree of uncertainty;
- governments need to establish an organizational structure that has the data and personnel to generate a good estimate; and
- revenue collections should be monitored monthly, and revisions in revenue estimates should be based upon changes in economic assumptions and rates of tax collection.

These practices may improve the level of confidence the public has in forecasts, but the report concludes that:

... there is no specific revenue estimating process that, when applied to all states, will yield a correct revenue estimate. Frequent changes in state tax bases make a correct estimate difficult to achieve; differences in state revenue systems makes a single approach impossible; and politics makes a single process unlikely.... There is wide agreement, however, that some degree of consensus is good and that while a consensus revenue estimate may be impossible to institute, a consensus process for developing the economic forecast is desirable.⁴

NASBO/FTA buttress their conclusion with a comparison of estimated actual state collections on personal income and sales taxes with the revenue projections used in formulating budgets for fiscal year 1989. The report shows that in 34 states the estimates of collected revenues were higher than the projections at the beginning of the budget process. Ten states, including Connecticut, were estimating revenue collections lower than the original budget projections, and only six states were considered to be on target (forecasts equaled actual collections).

Beyond the methodologies for revenue estimating, there are differences among states as to what agency has the responsibility for publishing the forecast. A survey done by KPMG Peat Marwick on state revenue estimating practices in the fall of 1989 found that in 31 states an executive agency had the responsibility for compiling revenue forecasts. In 2 states the legislature had primary responsibility, while in 14 states forecasting is shared

⁴ Howard, Marcia A., Good Practices in Revenue Forecasting, National Association of State Budget Officers, 1989.

between the legislative and executive branch. (In some of the 14 states there may also be participation by an appointed advisory group). In four states a separate entity had been created, such as the Hawaii Council on Revenues, and given the chief responsibility for projecting revenues. Appendix A provides the survey results compiled by KPMG Peat Marwick.

REVENUE FORECASTING IN CONNECTICUT

The governor's budget message to the General Assembly includes an estimate of revenues to be received during the proposed budget year. The governor's forecast is prepared by the Office of Policy and Management (OPM) and covers every major source of revenue. The forecast is primarily the function of the revenue analysis unit located within OPM's Budget and Financial Management Division.

In preparing its revenue estimate, OPM obtains national and state economic forecasts from WEFA, Inc. A further perspective on future economic activity is obtained from the newsletter, The Blue Chip Indicators. The newsletter reports a consensus forecast of the national economy based on the responses of 50 leading financial institutions. Additional advice is received from informal discussions with prominent regional and state economists and financial experts.

Key economic variables from the forecast of economic activity are needed to estimate revenue from the state's major taxes. The variables are inserted into a model used for estimating tax revenues that was developed for OPM by WEFA, Inc.

The forecast is finalized in January during meetings involving the governor and members of his staff and OPM's budget people. The forecast adopted by this group is included in the governor's budget proposal, which is submitted to the General Assembly in February.

It would be inappropriate to evaluate the accuracy of the revenue forecast submitted to the General Assembly by the governor without making adjustments for the tax proposals upon which the forecast was based but not enacted. Also any portion of actual collections resulting from legislative action occurring subsequent to the budget being submission should be discounted. However, even if these steps were taken, the adjustments would be estimates and have an error element of their own. Given the difficulty of isolating the true error contained in the governor's revenue forecast from other sources of error, a direct analysis of accuracy of the forecast in the governor's budget submission will not be undertaken. Instead, a substitute, the initial revenue estimate issued by OPM after the budget has been adopted, will be used to reflect OPM's revenue estimating proficiency. This avoids the problem of having to adjust for changes made by the legislature to the governor's tax proposals.

Table I-2 compares the initial forecast of year-end revenues issued by OPM after the state budget has been adopted with actual collections. This forecast is prepared in August and released by the state comptroller's office on September 1. Data in the table cover fiscal years 1981 through 1990. The revenue collection data have been adjusted to account for tax changes made after the forecasts were adopted. Examples of the adjustments include: \$27 million in reductions to FY 85 revenue resulting from changes in the effective dates of certain taxes enacted in the session following adoption of the budget; and \$85 million in revenue enhancements passed in the 1990 session but affecting the FY 90 revenue collections.

Within the legislature, review of the governor's revenue forecast is initially the responsibility of the Joint Committee on Finance, Revenue and Bonding. The committee is aided in its analysis by the Office of Fiscal Analysis (OFA), which critiques the governor's forecast and provides independently derived revenue estimates.

Table I-2. Comparison of OPM Revenue Forecast with Actual Revenue Collected for Fiscal Year 1981-1990. (000s)				
Year	OPM Forecast (Issued Sept.1)	Adjusted Actual Revenues	Adjusted Revenue Differ- ences	% Differen- ce: Actual v. Forecast
FY 81	\$2,703,718	\$2,660,889	-\$42,829	-1.58%
FY 82	\$2,976,800	\$2,994,491	-\$17,691	-0.59%
FY 83	\$3,226,100	\$3,233,890	\$7,790	0.24%
FY 84	\$3,658,300	\$3,840,242	\$181,942	4.97%
FY 85	\$3,766,000	\$4,037,884	\$271,884	7.22%
FY 86	\$4,011,500	\$4,326,092	\$314,592	7.84%
FY 87	\$4,370,000	\$4,742,875	\$372,875	8.53%
FY 88	\$4,972,100	\$4,860,295	-\$111,805	-2.25%
FY 89	\$5,459,550	\$5,368,762	-\$90,788	-1.66%
FY 90	\$6,382,600	\$6,026,500	-\$356,100	-5.58%

After consultations with OFA, the governor's staff, and, in some instances, outside experts, the committee adopts its own

revenue estimates. Ultimately, the full General Assembly approves an official revenue forecast through passage of the appropriation act.

Table I-3 compares the General Assembly's revenue forecasts with actual collections for fiscal years 1981 through 1990. The same adjustments to the revenue collection data made in Table I-2 were made here.

TABLE I-3. Comparison of General Assembly's Revenue Forecast with Actual Revenue Collected. (000s)				
Year	General Assembly's Forecast	Adjusted Actual Revenues	Adjusted Revenue Differences	% Difference: Actual v. Forecast
FY 81	\$2,708,500	\$2,660,889	-\$47,611	-1.76%
FY 82	\$2,985,934	\$2,994,491	\$8,557	0.29%
FY 83	\$3,229,100	\$3,233,890	\$4,790	0.15%
FY 84	\$3,649,800	\$3,840,242	\$190,442	5.22%
FY 85	\$3,660,450	\$4,037,884	\$377,434	10.31%
FY 86	\$3,972,400	\$4,326,092	\$353,692	8.90%
FY 87	\$4,297,000	\$4,742,875	\$445,875	10.38%
FY 88	\$4,947,300	\$4,860,295	-\$87,005	-1.76%
FY 89	\$5,547,550	\$5,368,762	-\$178,788	-3.22%
FY 90	\$6,323,000	\$6,026,500	-\$296,500	-4.69%

Comparing the data in Table I-2 and Table I-3, it is clear that in most years the forecasting errors of OPM and the General Assembly are in the same direction and differ only slightly in magnitude. Over the 10 years covered in the tables, the average deviation between revenues forecasted and collected was 4.05 percent for OPM and 4.67 percent for the legislature. The greater accuracy of the OPM forecast is clearly related to the fact that the OPM estimates used here were developed two to three months after the General Assembly's forecast and therefore, had the benefit of later data.

A major difficulty for all revenue forecasters is the volatility of a state's tax structure. Revenue sources, which fluctuate from year to year, impact the stability and predictability of state revenue collections. Connecticut's tax structure

has highly volatile elements that diminish the ability to chart future trends. In a recent report by Price Waterhouse, prepared for the Connecticut Tax Task Force, Connecticut's major general fund taxes as well as personal income and consumption expenditures were analyzed to obtain a measure of volatility.⁵ When these measures are compared with the forecasts for specific taxes as was done in Table II-4, the difficulty for revenue forecasting becomes clearer.

The Price Waterhouse study traced the annual percentage change in tax receipts from 1973 to 1990, adjusted for tax rate changes, and found the sales and use tax to be quite volatile. It had a standard deviation of 5.09 percent, meaning that one-third of the time, the percent change was either greater than 14 percent or less than 4 percent, a large spread given its size as a revenue generator. The study found the corporation tax to be even more volatile. Its standard deviation was 14.39.

Given these measures of variation in the state's principal taxes, it is easy to understand the difficulty in forecasting revenues. An examination of the three years in which the margin of error in the revenue forecasts adopted by the legislature was the greatest will illustrate the point.

Table I-4 shows deviations from the forecast for the sales and use, corporations, and capital gains taxes for fiscal years FY 85, FY 86, and FY 87. The effect of large forecasting errors in the three taxes, which account for over 75 percent of the state's revenue sources, on the accuracy of the overall forecast is obvious.

Table I-4. Deviation of Legislative Forecast from Actual Revenues for Selected Taxes.			
Tax / Year	FY 85	FY 86	FY 87
Sales & Use	7.37%	2.33%	9.75%
Capital Gains	18.60%	28.99%	51.29%
Corporations	25.31%	32.71%	12.99%

There are a number of factors accounting for the variability of these taxes. For example, KPGM Peat Marwick noted in its preliminary findings of a study of OPM for the Thomas Commission

⁵ Analysis of the Volatility of Connecticut's Major Revenue Sources, Price Waterhouse, October 17, 1990.

that "the corporate tax presents particularly difficult estimating problems because the base is small and can fluctuate significantly due to decisions by taxpayers such as when to write-off bad receivables or loans". Also, external economic factors can have an enormous impact on the state's revenue. This is illustrated by the data for FY 87 in Table I-4. There, the forecast of capital gains taxes for FY 87 was nearly 52 percent less than the revenue actually realized. In the same year the sales and use tax, which provides over half of the state's revenue, was approximately 9 percent higher than forecasted. Both of these outcomes can be linked to accelerated purchases of automobiles and sales of assets encouraged by the 1986 federal tax reform that was enacted after the state forecast had been finalized.

Of course, the factors affecting tax revenue variability in Connecticut are also present in other states. While recognizing that forecasting accuracy will be affected by the proportional contribution of a given tax to a state's tax revenue, it is still possible to make a rough comparison among states. Table I-5 provides such a comparison. The table contrasts Connecticut with Delaware, which uses a joint executive and legislative council to estimate revenues, and two separate forecasts produced by Massachusetts. One of the Massachusetts's forecasts is developed by an executive branch agency; the other is produced by an economic advisory board. In the comparisons shown in Table I-5, Connecticut does quite well.

Table I-5. Differences Between Forecast and Actual Revenue.				
Fiscal Year	Mass. Rev. Dept.	Mass. Adv. Bd.	Delaware Council	Connecticut
FY 86	12.0	10.2	n/a	8.9
FY 87	2.5	1.5	n/a	10.4
FY 88	4.4	3.5	4.7	1.8
FY 89	4.8	4.1	6.6	3.2
FY 90	8.7	9.5	1.4	4.7

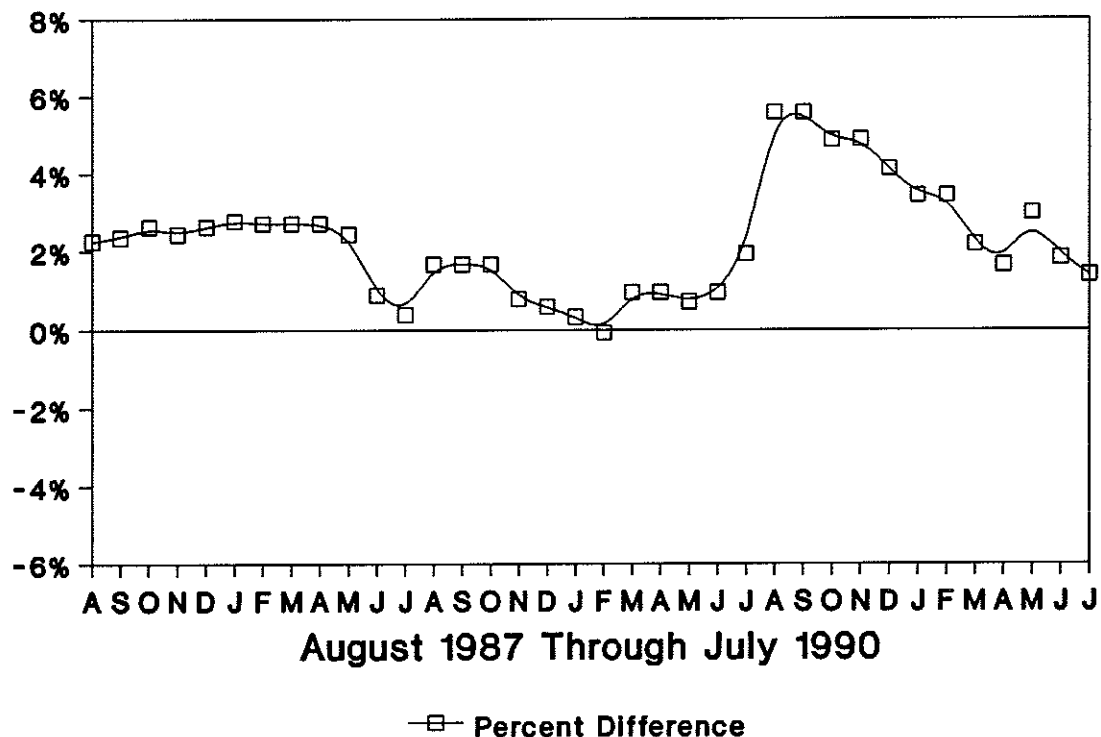
MONITORING CURRENT YEAR REVENUES

In addition to forecasting revenues for the purpose of budget preparation, OPM is required by Section 3-115 of the Connecticut General Statutes to provide the comptroller and the legislature with monthly estimates of current year revenue.

The methodology used by OPM staff in monitoring current year revenues differs from the process followed in preparing the forecast included in the governor's budget. The current year monthly estimates are much less reliant on the state's economic outlook and much more dependent on actual revenue collections.

Figure I-1 plots the deviations between the year-end revenue collected and each monthly forecast of year-end revenue issued by OPM between August 1987 and July 1990. The graph shows that, throughout FY 88, OPM's monthly forecasts of year-end revenues were consistently greater than actual year-end collections. The same was the case for all but one month of FY 89 revenue collections. The graph shows the greatest deviations occurred in FY 90, although OPM's estimates did become increasingly more accurate as the year progressed.

FIGURE I-1. Percent by which OPM's Monthly Forecast of Year-End Revenue Exceeded Actual Year-End Revenue Collected



SECTION II

RECOMMENDATIONS

Overall, the program review committee finds the process followed in developing Connecticut's revenue forecast to be consistent with approaches taken in many other states. It incorporates a blend of econometric modeling and economic advice obtained from an array of expert sources. Given the limitations of current econometric models and the often conflicting views of economists, Connecticut's consensus-oriented process is sound. It is the committee's belief that major structural changes would not produce more accurate forecasts.

Although the committee does not believe major structural changes are needed, improvements could be made. Most states use some form of consensus forecasting to develop information on how the economy is doing and then measure the impact of economic activity on state revenue. Many times this approach will combine mathematical modeling with economic advice from a variety of sources, as noted earlier.

The program review committee believes that Connecticut could benefit by establishing a forum for the exchange of economic information and bringing together the expertise it currently has among those groups involved in economic forecasting. While consensus is not always easy to achieve, providing a forum for the sharing of the best information available with policy-makers who must make decisions on state revenues could greatly improve public confidence and likely raise the level of accuracy.

To enhance Connecticut's current revenue forecasting practices, the program review committee recommends the creation of the Connecticut Economic Conference Board to convene a biannual conference on Connecticut's economy. The purpose of the economic conference is to bring together experts from business, government and academia to present to the governor and the general assembly information on the state of the economy, in the nation and Connecticut, and to forecast the impact the economy will have on state revenues. The conference should be held in September and February each year.

The Connecticut Economic Conference Board shall consist of seven permanent members. One member shall be the Secretary of the Office of Policy and Management, one shall be the director of the Office of Fiscal Analysis, and five shall be economists. One member shall be appointed by the Speaker of the House, one shall be appointed by the President Pro Tempore of the Senate, one shall be appointed by the Minority Leader of the House, one shall be appointed by the Minority Leader of the Senate, and one shall be appointed by the governor. The appointments may come from the

academic, business, or private sector. The board shall choose its chair.

The board's principal duty shall be to convene a biannual conference on Connecticut economy and provide economic advice to the governor and the leadership of the general assembly.

As noted earlier, Connecticut's tax structure is sharply influenced by changes in the economy. Revenues are dependant upon two volatile components -- a narrow based consumption (sales) tax, and a corporate profits tax -- that can change quickly in an unstable economy. Having the best current information available on economic activity is necessary in order to accurately estimate future revenues. A forum held twice a year will provide relevant information on Connecticut's changing economy. A permanent board of economic and fiscal experts will provide the governor and the legislature with readily available sources of knowledge.

A second area where the program review committee concluded improvements could be made was OPM's monthly monitoring of year-end revenue. Currently, OPM monitors economic activity and factors changes into the monthly forecasts when it determines such an action is warranted. In the view of the committee, such discretion can result in changes not being made in a timely manner and contributes to the deviations between OPM's monthly estimates and actual year-end revenue collections. The committee believes that OPM should on a regular basis integrate its forecast of economic activity into the monthly estimates.

Specifically, the program review committee recommends that on November 1 and March 1 of each year, OPM formally issue a revised revenue forecast that incorporates updated estimates of the state's economic activity.

Under the committee's recommendation, OPM would be required at least twice a year to formally issue its economic forecast and factor the results into its monthly year-end revenue estimates. The specific dates selected by the committee are timed to maximize information provided by the Connecticut Economic Conference.

APPENDICES

STATE REVENUE ESTIMATING PRACTICES
KPMG PEAT MARWICK
Fall 1989 Survey Results

State	Responsibility			Other Official Estimates		Council of Economic Advisors?	Does Revenue Estimate Bind the Budget?		Estimate Updates? (5)	Reported Accuracy	Formal Review Process?	Technical Issues			Number of Professional Involved (6)	Other Duties? (7)	
	Agency (1)	Single Executive/ L = Legislative	Special Group (2)	Consensus (E & L) (3)	Yes/No?		New? (4)	Yes/No?				Estimate Budget?	In-House Econometric simulation Model?	Micro-simulation Model?			Forecast Horizon (Years)
Alabama	E			✓	No	N/A	No	No	None	1-2%	No	Yes	Current (C) + 2	2	Yes		
Alaska					Yes	No	No	No	Semi-annual	1-2%	No	No	C + 1	9	Yes		
Arizona	E			✓	Yes	No	No	No	Annual	1-2%	No	Yes	C + 1	6 (E) 2 (L)	Yes		
Arkansas	E				Yes	Yes	Yes	Yes	Biennial	N/A	No	Yes	2 years	3	Yes		
California	E				Yes	No	No	No	3 times/year	3-5%	No	Yes	C + 18 mo./ 4 yr.	6	Yes		
Colorado	E				Yes	No	Yes	Yes (15)	Quarterly	1-2%	No	No	C + 1	2	Yes		
Connecticut	E				Yes	No	Yes	Yes	Monthly review	1-2%	No	Yes	Current year	4	Yes		
Delaware		✓ (8)			No	N/A	Yes	Yes	6 times/year	3-5%	No	Yes (17)	C + 1	5	Yes		
District of Columbia	E				No	N/A	No	Yes	Semi-annual	1-2%	Yes	Yes	C + 2	3	Yes		
Florida	E				No	N/A	No	Yes	Semi-annual	1-2%	No	Yes	C + 2	20	Yes		
Georgia		✓ (9)			No	N/A	No	Yes	Annual	1-2%	No	Yes	C + 1	1	Yes		
Hawaii		✓ (10)			No	N/A	No	Yes	Quarterly	1-5%	No	Yes	C + 6	7	No		
Idaho	L (11)				Yes	No	No	Yes	None	1-2%	No	Yes	C + 1	3 (E) 2 (L)	Yes		
Illinois	E		✓		Yes	No	No	Yes	Quarterly	1-2%	No	No	C + 1	3	Yes		
Indiana			✓		No	N/A	Yes	Yes	3 times/year	1-2%	No	Yes	C + 1	5	Yes		
Iowa					No	N/A	Yes	Yes	Up to quarterly	3-6%	No	Yes	C + 1	5	Yes		
Kansas	E				Yes	No	No	No	Semi-annual	3-5%	No	No	C + 1	11	Yes		
Kentucky	E				Yes	No	Yes	Yes	None	1-2% (varies)	No	Yes	C + 2	5	Yes		
Louisiana			✓		Yes	No	No	Yes	Quarterly	1-2%	No	Yes	C + 1	1 (E) 2.5 (L)	Yes		
Maine	E				No	N/A	No	Yes	None	3-5%	No	No	C + 1	4	Yes		
Maryland		✓ (12)			Yes	No	No	Yes	Irregular	1-2%	No	Yes	C + 2	3	Yes		
Massachusetts	E				Yes	No	No	Yes	Semi-annual	3-5%	No	Yes	C + 1	8	Yes		
Michigan	E				Yes	No	No	No	None	1-2%	No	Yes	C + 1	5	Yes		
Minnesota	E				No	N/A	No	No	None	1-2%	No	Yes	C + 2	4	No		
Mississippi	E		✓		Yes	Yes	No	No	Annual	<8%	No	Yes	C + 1/2-3 yr.	6	Yes		
Missouri	E				Yes	No	No	Yes	None	1-2%	No	Yes	4 years	2	Yes		
Montana	E				Yes	No	No	Yes	None	1-2%	No	Yes	C + 2	2	Yes		
Nebraska	E		✓		No	N/A	Yes	Yes	Quarterly	3-5%	No	Yes	C + 1	2 (E) 1 (L)	Yes		
Nevada	E				Yes	No	No	No	None	3-5%	No	No	C + 2	2	Yes		
New Hampshire	E				Yes	No	No	No	Semi-annual	3-5%	No	No	5-6 years	4	Yes		
New Jersey	E				Yes	No	No	Yes	Quarterly	3-5%	No	Yes	C + 1	5.5	Yes		
New Mexico	E		✓		Yes	No	Yes	Yes	Quarterly	3-5%	No	Yes	C + 1	7	Yes		
New York					Yes	N/A	No	Yes	Quarterly	1-5%	No	Yes	C + 1	11	Yes		
North Carolina	L (13)				Yes	No	No	No	Quarterly	2-4%	No	No	C + 1	3	Yes		
North Dakota					Yes	No	No	Yes	Semi-annual	1-2%	No	No	C + 1	4	Yes		
Ohio	E (14)				Yes	N/A	Yes	Yes	None	3-5%	No	Yes	C + 2	2	Yes		
Oklahoma			✓		No	N/A	No	Yes	Semi-annual	2-4%	No	Yes	C + 2	2 (E) 2 (L)	Yes		
Oregon	E				No	N/A	Yes	Yes	None	5-10%	No	Yes	C + 1	6	Yes		
					No	N/A	Yes	Yes	Quarterly	3-5%	No	Yes	C + 3	2	Yes		

STATE REVENUE ESTIMATING PRACTICES
Fall 1989 Survey Results
(Continued)

State	Responsibility			Other Official Estimates		Council of Economic Advisers?	Does Official Estimate Bind the Budget?	Estimate Updates? (5)	Reported Accuracy	Formal Review Process?	Technical Issues				
	Single Agency (1)	Special Group (2)	Consensus (E & L) (3)	Yes/No?	New?						In-House Econometric Model?	Micro-simulation Model?	Forecast Horizon (Years)	Number of Professional Involved (6)	Other Duties? (7)
Pennsylvania	E			Yes	No	No	Yes	None	1-2%	Yes (Leg.)	Yes	Yes (limited)	C + 5	7	Yes
Rhode Island	E			Yes	No	No	Yes (20)	None	1-2%	Yes (Leg.)	Yes	Yes	C + 1/5 year	2	Yes
South Carolina			✓	No	N/A	No	No	Semi-annual	N/A	Yes (Leg.)	No	No	C + 2	8	Yes
South Dakota			✓	No	N/A	No	No	None	3-5%	No	Yes (limited)	No	C + 1	1 (E) 1 (L)	Yes
Tennessee	E			Yes	No	No	Yes	Semi-annual	3-5%	No	Yes	No	C + 1	1	Yes
Texas	E			No	N/A	Yes (19)	Yes	Irregular	1-2%	Yes (21)	Yes	No	C + 1	6	Yes
Utah			✓	No	N/A	No	Yes	Quarterly	2-3%	No	Yes	Yes	C + 1	1	Yes
Vermont	E			Yes	No	Yes	No	Semi-annual	1-10%	Yes (22)	Yes	Yes	C + 2	10	Yes
Virginia	E			No	N/A	Yes	Yes	Annual	1-2%	Yes	Yes	No	C + 1	4	Yes
Washington			✓	No	N/A	Yes	Yes	Quarterly	1-5%	No	Yes	Yes	C + 1	5	Yes
West Virginia	E			Yes	Yes	No	Yes	None	N/A	No	Yes	Yes	C + 2	5	Yes
Wisconsin	E			No	N/A	No	Yes	None	1-2%	No	Yes	Yes	C + 2	5	Yes
Wyoming			✓	No	N/A	No	No	Semi-annual	1-2%	No	No	No	C + 4	20	Yes
TOTALS															
E = 31	4	14	Yes = 27	Yes = 3	Yes = 14	Yes = 34	Quarterly = 12	1-2% = 24	Yes = 6	Yes = 38	Yes = 25	C + 1 = 27	Total = 284	Yes = 48	
L = 2			No = 24	No = 24	No = 37	No = 17	Semi-ann. = 13	3-5% = 20	No = 45	No = 13	No = 26	C + 2 = 13	Ave. = 5.6	No = 2	
Total = 33			N/A = 24	N/A = 24			Annual = 4	< 5% = 4				Other = 11			
							Other = 7	N/A = 2							
							None = 15								

Notes of State Revenue Estimating Practices Survey (Continued)

- (7) Reported duties in addition to formal revenue estimate preparation vary widely. Most often reported is review of legislation and the preparation of fiscal note estimates for pending legislation. Also mentioned were preparation of estimates for administrative rule changes, preparation of monthly newsletters, responses to data requests from the public and/or other agencies of government, preparation of state economic forecasts and associated analysis, participation in preparation of state bond prospectus, preparation of cash flow estimates for treasury cash management purposes, budget work, preparation of state annual financial reports, preparation of state statistics of income data, internal audit, preparation of speech material, and sundry special projects.
 - (8) Delaware Economic and Financial Advisory Council.
 - (9) Florida Consensus Estimating Conference.
 - (10) Hawaii Council on Revenues.
 - (11) A number of agencies provide input to the Revenue Estimating Committee of the Legislature.
 - (12) Maryland State Board of Revenue Estimates.
 - (13) Fiscal Research Division of the General Assembly with input from executive agencies. State Budget Office prepares other estimates under Executive Budget Act.
 - (14) Executive branch produces basic estimates which may be amended depending on legislative estimates.
 - (15) Estimates bind both Governor and General Assembly. Estimate may be overridden only by majority vote in both houses and approval of the Governor.
 - (16) Binding on the Governor but not on the legislature.
 - (17) A major model is maintained by the University of Delaware.
 - (18) A microsimulation model is in development for the individual income tax.
 - (19) The Comptroller of Public Accounts maintains an informal economic advisory council made up of leading economists from the private sector in the state.
 - (20) Binding only to a degree. Further information not available.
 - (21) Statutes provide for periodic review by a Council on State Revenue Estimates, but the Council does not meet.
 - (22) Both a Governor's Advisory Board of Economists and a Governor's Council on Revenue Estimates may review estimates and advise the Governor.
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